

Department of Treasury's 15<sup>th</sup> Annual Government  
Financial Management Conference

# **Analysis 100**

## **Analytics as a Strategy**

August 8-10, 2006

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# Presentation Overview

- **This presentation demonstrates the need for senior financial leaders to craft an deployable analytics strategy so that analysts gain a better understanding of what to analyze (*importance*) and how the results of their analysis (*relevance*) contribute to fact-based decisions.**
- **Participants learn how to bridge the gap between an analytics strategy and operational effectiveness and how organizations are using analytics to make fact-based decisions.**

# Presentation Overview

- **Determine key elements to craft a strategy towards credible analysis**
- **Diagnosis your organization's analytical proficiency**
- **Discuss the strengths and limitations of deploying your analytics strategy**
- **Bridge the gap between your analytics strategy and operational effectiveness**
- **Structure people, processes and technology around your analytics strategy**

# **Analytics Strategy for Performance Excellence**

- **Budget Analysis**
- **Decision Analysis**
- **Economic Analysis**
- **Financial Analysis**
- **Process Analysis**
- **Program Analysis**
- **Performance Analysis**
- **Statistical Analysis**

# **The Increasing Demand for Advanced Analytics is Evident in Business, Government and Education**

**January 23, 2006 Issue**

**January 2006 United States  
State of the Union Address  
Funds Math and Science  
Initiative**

**SAS and NCSU partner for  
New Institute for Advanced  
Analytics for Master's  
Degree in Analytics  
(scheduled 2007)**

**Fall 2006 Kennesaw State  
Launches a new MS in  
Applied Statistics**

# How Math Transforms Industries

Mathematicians have long enjoyed celebrity status in Silicon Valley and on Wall Street. Now they're plying their trade throughout the U.S. economy:

## » Consulting

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**IBM:** Big Blue is building math profiles of 50,000 consultants so that computers can pick the perfect team for every assignment. Other tools eventually will be able to track their progress, hour by hour, and rate their performance. Workers will eventually labor in virtual assembly lines.

## » Food and Beverage

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**ENOLOGIX:** The goal of this California consultancy is to help vintners mimic the chemistry of wines ranked highly by leading critic Robert B. Parker. It employs algorithms to cull a database of 70,000 vintages and run the analyses. Precise studies of customer data provide blueprints for new products.

## » Advertising

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**EFFICIENT FRONTIER:** The Silicon Valley startup provides mathematical optimization for online ad campaigns. It calculates response rates and return on investment for every advertisement. Broad shift from hunch-based campaigns to mathematical targeting.

## » Police and Intelligence

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**NATIONAL SECURITY AGENCY:** Mathematicians at nation's top techno-spy agency build algorithms to trawl Internet and phone traffic looking for patterns in speech, subject, and frequency that might point to the next attack. Investigators wade through rivers of data in search of would-be terrorists.

## » Marketing

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**UMBRIA:** Colorado startup assigns numeric values to picks and pans of products that pop up on blogs. Using vector graphics, it confirmed that raunchy Burger King ads online turned off nearly everyone, except for the target audience of young men. Math-based consultancies scour blogs and podcasts for market intelligence.

## » Media

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**INFORM:** This New York startup turns written articles into bits of geometry and organizes them in a virtual library. It can match the articles to readers' math-based profiles. Automatic systems threaten to supplant editors.

# **FY2007 Budget Analytical Perspectives**

## **Strengthening Federal Statistics**

- **Bureau of Economic Analysis**
- **Bureau of Justice Statistics**
- **Bureau of Labor Statistics**
- **Census Bureau**
- **Energy Information Administration**
- **Economic Research Service**
- **National Agriculture Statistics Service**
- **National Center for Education Services**
- **National Center for Health Statistics**
- **Office of Research, Evaluation and Statistics**
- **Statistics of Income, Internal Revenue Service**
- **Division of Science Resource Statistics**

# **ICSP Statistical Quality and Program Performance Dimensions, 2007**

***Interagency Council on Statistical Policy (ICSP) common Performance standards for use under The Government Performance and Reporting Act (GPRA) and the Program Assessment Rating Tool (PART).***

- **Product Quality**
  - **Relevance**
  - **Accuracy**
  - **Timeliness**
- **Program Performance**
  - **Cost**
  - **Dissemination**
  - **Mission Achievement**



- 1. You apply sophisticated information system and rigorous analysis not only to your core capability but also to a range of functions as marketing and human resources**
- 2. Your senior executive team not only recognizes the importance of analytics capabilities but also makes their development and maintenance a primary focus**

# **You know you compete on analytics when...**

- 3. You treat fact-based decision making not only as a best practice but also as a part of the culture that's constantly emphasized and communicated by senior executives**

# **Build a Team with the Proven Track Record in Delivering “Usable Analytics”**

**4. “You hire not only people with analytical skills but a lot of people with the very best analytical skills—and consider them a key to your success.”**

**Source: Harvard Business Review**

# **You know you compete on analytics when...**

- 5. Your not only employ analytics in almost every function and department but also consider it so strategically important that you manage it at the enterprise level**
- 6. You not only are expert at number crunching but also invent proprietary metrics for use in key business processes**

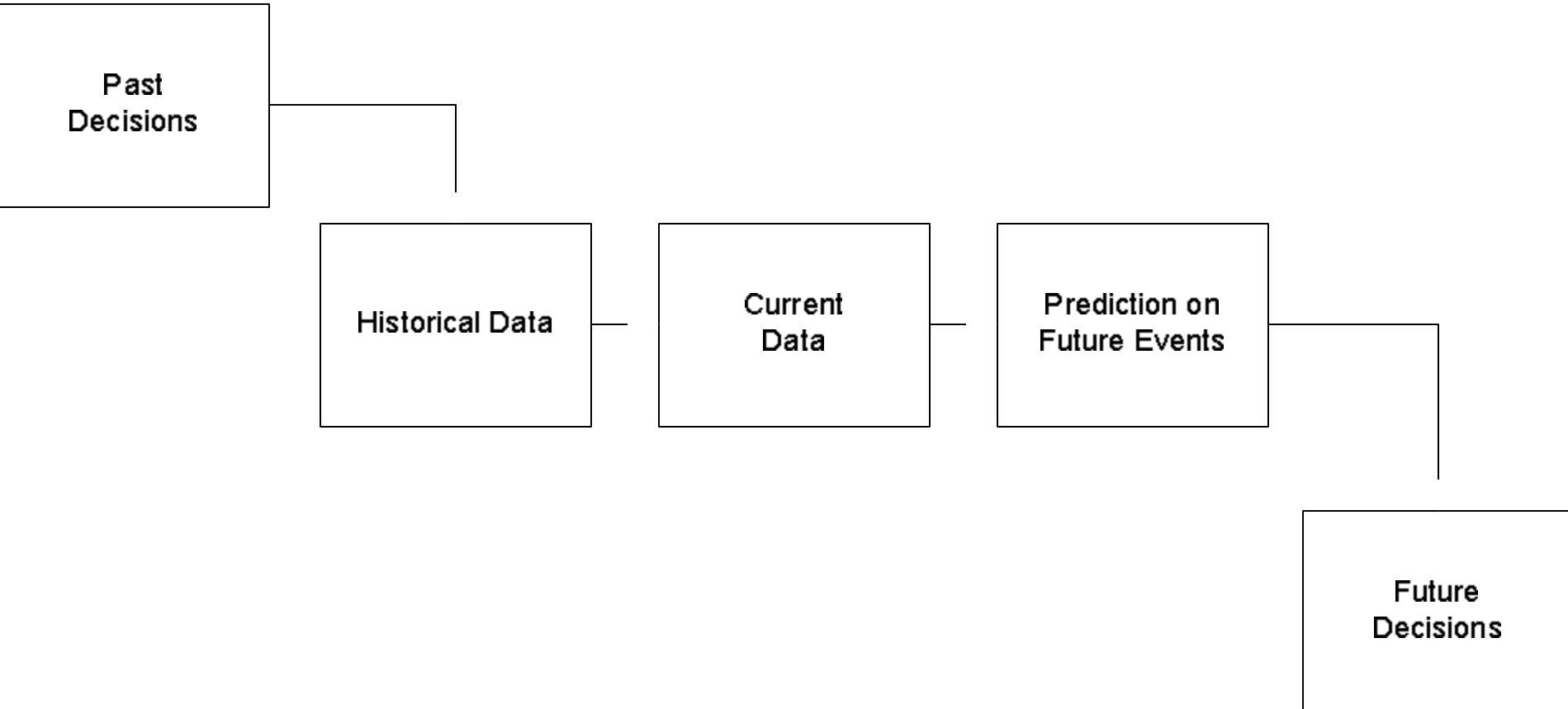
# **You know you compete on analytics when...**

- 7. You not only use copious data and in-house analysis but also share them with customers and suppliers**
- 8. You not only avidly consume data but also seize every opportunity to generate information, creating a “test and learn” culture based on numerous small experiments**

# **You know you compete on analytics when...**

- 9. You not only have committed to competing on analytics but also have been building your capabilities for several years**
  
- 10. You not only emphasis the importance of analytics internally but also make quantitative capabilities part of your company's story, to be shared in the annual report and in discussions with financial analysts**

# Predictive Analytics



# Analytics Methodologies

- **Spreadsheet Modeling**
- **Business Intelligence**
- **Performance Management**
- **Six Sigma**
- **Predictive Analytics**

**Think.**



# **Presenter's Perspective**

- **No strategy or guidance regarding analytics**
- **Culture has not made room to perform real analytics**
- **Analytical skills (tools and techniques)**
- **Thinking (Data) Output versus Outcome**
- **Presentation (too many charts of little to no value)**
- **Reader has to work too hard to analyze and interpret charts**
- **Charts it is unclear what the goal is**
- **What's favorable/unfavorable**
- **Writing Skills Need for Stronger Impact statements**
- **Bigger is not always better**

# The Growing Demand for “Usable” Analytics

- **Statistical Analysis**
- **Financial Analysis**
- **Budget Analysis**
- **Business Analysis**
- **Process Analysis**
- **Program Analysis**
- **Performance Analysis**
- **Economic Analysis**
- **Decision Analysis**

# 5-Phase Analysis Model

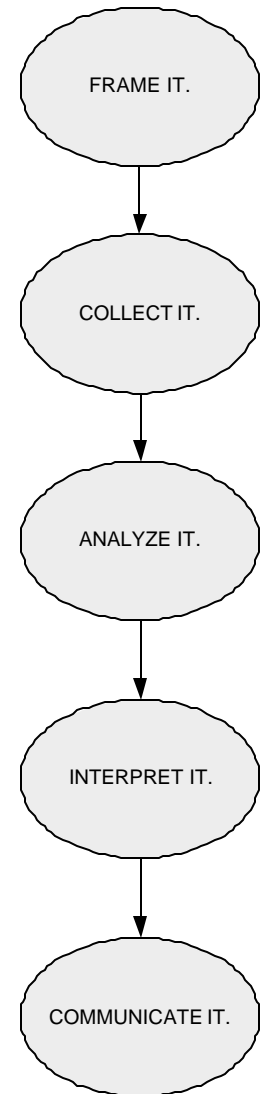
**Phase 1 – Frame Problem/Opportunity**

**Phase 2—Data Collection**

**Phase 3—Construct Analysis**

**Phase 4—Perform Interpretation**

**Phase 5—Present Analytical Solutions**



# **Remember...**

**EVERYTHING begins  
with an Idea...**

# BEFORE you collect or analyze any data, know WHY. ..

## Why GAO Did This Study:

In 2002, GAO reported that the number of restatement announcements due to financial reporting fraud and/or accounting errors grew significantly between January 1997 and June 2002, **negatively impacting the restating companies' market capitalization by billions of dollars.**

GAO was asked to update key aspects of its 2002 report (GAO-03-138).

# **Analyst must know what tools to reach for to perform analysis...**

This report discusses

- (1) the number of, reasons for, and other trends in restatements;
- (2) the impact of restatement announcements on the restating companies' stock prices and what is known about investors' confidence in U.S. capital markets; and
- (3) regulatory enforcement actions involving accounting- and audit-related issues.

**To address these issues, GAO collected restatement announcements meeting GAO's criteria, calculated and analyzed the impact on company stock prices, obtained input from researchers, and analyzed selected regulatory enforcement actions.**

# What Will It Take...

- **Diagnosis your organization's analytical proficiency**
- **Discuss the strengths and limitations of deploying your analytics strategy**
- **Structure people, processes and technology around your analytics strategy**
- **Bridge the gap between your analytics strategy and operational effectiveness**

# **Craft Your Analytics Strategy**

- **Communicate Your Intent**
- **Stories work best**
- **Poise questions that you or your boss are being asked**
- **Ensure what you are asking for is doable in the time you need it**
- **Challenge your team to perform advanced analytics**
- **Get feedback on how month end reporting is performed**
- **Give feedback on what is working and what is not**



# **For additional information...**

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